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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/599,559

Applicant(s)

BREEBAART ET AL.

Examiner

DISLER PAUL

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/23/09.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The applicant's amended claim with the down-mixer for down-mixing segmented and transformed representation of input signals to generate output signals to be conveyed in the M output channels together with the parameter data" has been analyzed and rejected with respect to newly prior art of Herre et al. (US 7,447,317 B2).

Herre et al. disclose of a down-mixer configured for down-mixing segmented and transformed representation of the input signals to generate corresponding output signals to be conveyed in the M output channels together with the parameter data (fig.1 (12,14,18)); col.9 line 1-22; col.9 line 51-67/down-mixing to generate such M output channels as in (fig.1 (18,20) and with parameter data (fig.1 (14) and generate the M channel (fig.1 (18,20) and when converting/down-mixing the signals it is inherent property of such down-mixer to segment/fragment such plurality of signals (multi-channels) for correctly enabling the reduced signals).

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 6, 9-13, 16, 19-22; 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Herre et al. (7,447,317 B2).

Re claim 1, Herre et al. disclose of a multi-channel encoder arranged to process input signals conveyed in N input channels to generate corresponding output signals conveyed in M output channels together with parametric data such that M and N are integers and N is greater than M the encoder comprising: a down-mixer configured for down-mixing segmented and transformed representation of the input signals to generate corresponding output signals to be conveyed in the M output channels together with the parameter data (fig.1 (12,14,18); col.9 line 1-22; col.9 line 51-67/down-mixing to generate such M output channels as in (fig.1 (18,20) and when converting/down-mixing the signals it is inherent property of such down-mixer to segment/fragment such plurality of signals (multi-channels) for correctly enabling the reduced signals) and having an analyzer for processing a segmented and transform representation of the input signals either during down-mixing or as a separate process, said analyzer being operable to generate said parametric data complementary to the output signals to be conveyed in the M output channels, said parametric data describing mutual differences between the N channels of input signal so as to allow substantially for regenerating during decoding of one or more of the N channels of input signal from the M channels of output signal, said output signals being in a form compatible

for reproduction in decoders providing for N or for fewer than N output channels to enable backwards compatibility (fig.1 (14);fig.3A; col.9 line 23-38; col.11 line 8-23; col.12 line 33-52/analyzer with cues of difference of the input channel and for decoding compatibilities and such analyzer with sub-bands and subset of the channels and thus segmented portion of the input signal with backward compatibility as in fewer channels is determined from the plurality of inputs (LC,RC)).

Re claim 2, the encoder according to claim 1, wherein the encoder is a 5-channel encoder arranged to generate the output signals and parametric data in a form compatible with at least one of corresponding 2-channel stereo decoders, 3 channel decoders and 4-channel decoders 9 (from the plurality of surround input (fig.1 (10); create fewer channels output M (fig.1 (20) for decoding).

Re claim 3, the encoder according to claim 1, wherein the analyzer includes processing means for converting segments of the input signals by way of transformation from a temporal domain to a frequency domain and for processing these segmented

and transformed input signals to generate the parametric data (fig.3A (140a); col.11 line 24-32/frequency analysis).

Re claim 6, the encoder according to claim 1, including a coder for processing the input signals to generate M intermediate audio data channels for inclusion in the M channels output signals, the analyzer further being arranged to output information in the parametric data relating to at least one of: inter-channel input signal power ratios or logarithmic level differences; inter-channel coherence between the input signals; a power ratio between the input signals of one or more channels and a sum of powers of the input signals of one or more channels; and phase differences or time differences between signal pairs (fig.3A (140f); col.12 line 20-28/channel and time difference of the channels).

Re claim 9, the encoder according to claim 1, wherein at least one of the input signals conveyed in the N channels corresponds to an effects channel (fig.1 (10); with surround effect channel).

Re claim 10, the encoder according to claim 1 adapted to generate the output signals in a form suitable for playback using conventional playback systems (fig.8; col.14 line 15-30).

RE claim 11, Herre et al. disclose of a method of multi-channel encoding, the method comprising: (a) down-mixing, via a down-mixer, segmented and transformed representations of input signals conveyed in N input channels of a multi-channel encoder to generate the corresponding output signals conveyed in M output channels, wherein M and N are integers, wherein N is greater than M (fig.1 (12,14,18); col.9 line 1-22; col.9 line 51-67/down-mixing to generate such M output channels as in (fig.1 (18,20), wherein N channel (fig.1 (10) and M channel being less (fig.1 (20); and when converting/down-mixing the signals it is inherent property of such down-mixer to segment/fragment such plurality of signals (multi-channels) for correctly enabling the reduced signals) ; and a processing, via an analyzer, the segmented and transformed representations of the input signals to provide said parametric data complementary to the output signals conveyed in the M output channels, said parametric data describing mutual differences between the N channels of input signal so as to allow substantially for

regeneration of the N channels of input signal from the M channels of output signal during decoding, said output signals being in a form compatible for reproduction in decoders providing for N or for fewer than N channels (fig.1 (14);fig.3A; col.9 line 23-38; col.11 line 8-23; col.12 line 33-52/analyzer with cues of difference of the input channel and for decoding compatibilities and such analyzer with sub-bands and subset of the channels and thus segmented portion of the input signal with backward compatibility as in fewer channels is determined from the plurality of inputs (LC,RC)).

Re claims 12-13, 16, 19 have been analyzed and rejected with respect to claims 2-3; 6, 9 respectively.

Re claims 20-21 have been analyzed and rejected with respect to claim 1.

Re claim 22, A decoder operable to decode encoded output data as generated by an encoder according to Claim 1, said encoded output data comprising M channels and associated parametric data generated from input signals of N channels such that $M < N$ where M and N are integers (N with fig.1 (10) and M as in fig.1

(18,20) with less or fig.2 (28,30)), the decoder including a processor: for receiving the M channels of encoded output data, segmenting the M channels of encoded output data and transforming the segmented data by converting it from a time domain to a frequency domain (fig.2 (28,30); fig.5 (52); col.10 line 20-33; col.13 line 1-17) and for applying the parametric data in the frequency domain to extract content from the M channels to regenerate from the M channels regenerated data content corresponding to input signals of one or more of N channels not directly included in or omitted from the encoded output data (fig.2 (32); col.10 line 35-45; col.13 line 1-17/for recreating all the multiple channels); and for processing the regenerated data content for outputting one or more of the regenerated input signals of N channels at one or more outputs of the decoder (fig.2 (36): col.13 line 25-35).

RE claim 25, the decoder according to Claim 24, said decoder being operable to generate its one or more decoder outputs solely from said M channels of encoded output data received at the decoder (fig.1 (18,20); fig.2 (22)).

4. Claims 4-5; 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herre et al. (7,447,317 B2) and Tsushima et al. (US 2004/0028244 A1).

Re claim 4, the encoder according to claim 3, wherein at least one of the down-mixer and the analyzer are arranged to process the input signals (fig.1), But Herre et al. fail to disclose of the specific wherein processing as a sequence of time-frequency tiles to generate the output signals. But, Tsushima et al. disclose of a system wherein processing as a sequence of time-frequency tiles to generate the output signals (par [0008, 0032]/frames of discrete signals). Thus, it would have been obvious for one of the ordinary skill in the art to have modified the above with incorporating processing as a sequence of time-frequency tiles to generate the output signals for efficiently reproducing audio signal with fine precision.

Re claim 5, the encoder according to claim 4, but, the combined teaching of Herre et al. and Tsushima et al. as a whole, fail to disclose of wherein the tiles are obtained by transformation of mutually overlapping analysis windows. But, it is noted having the specific wherein the tiles are obtained by transformation of mutually overlapping analysis windows is merely an obvious variation of the designer's choice based on his need. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the combination with the tiles are obtained by

transformation of mutually overlapping analysis windows for efficiently reproducing audio signal with fine precision.

Re claims 14-15 have been analyzed and rejected with respect to claims 4-5.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Herre et al. (7,447,317 B2) and Scheiber (US 5,857,026).

Re claim 7, the encoder according to claim 6, but, Herre et al. fail to disclose wherein having phase differences and said phase differences are average phase differences. But, Scheiber disclose of a system wherein having phase differences (col. 3 line 15-25/phase difference as decolleration). Thus, it would have been obvious for one of the ordinary skill in the art to have modified combination with having phase differences for providing improved separation between decoded signals for sound localization.

However, the combined teaching of Herre et al. and Scheiber as a whole, fail to disclose of the phase differences are average phase differences. But, it is noted having the specific phase differences being average phase differences is merely the designer's preference. Thus, it would have been obvious for one

of the ordinary skill in the art to have modified the combined teaching of Herre et al. and **Scheiber** as a whole, with phase differences are average phase differences for providing improved separation between decoded signals for sound localization.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable Herre et al. (7,447,317 B2) and Baumgarte et al. (US 2003/0035553 A1).

Re claim 17, the encoder according to claim 16, but, Herre et al. fail to disclose wherein having power differences and said power differences are average power differences. But, Baumgarte et al. disclosed of a system wherein the specific wherein having power differences (par [0074]/power difference of the input level signals for determining ILD in localizing). Thus, it would have been obvious for one of the ordinary skill in the art to have modified the above with the having power differences for generating the spatial cues or localization of the signals.

However, the combined teaching of Herre et al. and Baumgarte et al. as a whole, fail to disclose of the power difference being average power difference. But, it is noted the concept of having such power difference being average power differences is merely the designer's preference. Thus, it would have been obvious for one of the ordinary skill in the art to have

modified the above with having power differences and said power differences are average power differences for providing improved separation between decoded signals for sound localization.

7. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable Herre et al. (7,447,317 B2).

Re claim 23, the decoder according to claim 22, wherein said processor is operable to apply a decorrelation filter to obtain decorrelated versions of signals for use in regenerating said one or more input signals of N channels at the decoder (fig.2 (32); col.13 line 1-17/to regenerate the original output signal with frequency inherently by filtering for enabling such band selection).

However, Heere et al. fail to disclose of using an all-pass filter. But, official notice is taken having all-pass filter is well known in the art. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the above with all-pass filter for enabling regenerating of the original signal.

7. Claims 8, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herre et al. (7,447,317 B2) and kinoshita et al. (US 5,982,903).

Re claim 8, the encoder according to claim 6, wherein calculation of at least one of the phase differences, coherence data and the power ratios (see claim 6), but Herre et al. fail to disclose of the specific wherein said calculation is followed by principal component analysis (PCA) and/or inter-channel phase alignment to generate the N output signals. kinoshita et al. .

Disclose of a system wherein said calculation is followed by principal component analysis (PCA) to generate output signals (col.12 line 15-35; col.13 line 35-45/analysis on signals).

Thus, it would have been obvious for one of the ordinary skill in the art to have modified the combination with calculation is followed by principal component analysis (PCA) to generate output signals for obtaining sound signal of most signal energy for localizing sound image.

Re claims 18 have been analyzed and rejected with respect to claim 8.

6. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable Herre et al. (7,447,317 B2) as evidence by Myburg et al. (US 20080195397 A1).

Re claim 24, the decoder according to Claim 23, wherein the processor is operable to split signals of the M channels and decorrelated versions thereof into their constituent components for regenerating said one or more input signals of N channels at the decoder (fig.5 (4=54,56,52); fig.2 (32,36)/signal synthesized is split to reproduced original signals).

However, Herre et al. fail to disclose of the inverse encoder rotation. But, official notice is taken using the inverse encoder rotation is well known in the art as evidence by Myburg et al. (par [0062]). Thus, it would have been obvious for one of the original skill in the art to have used the inverse encoder rotation for recreating the original signals.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DISLER PAUL whose telephone number is (571)270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2614

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614

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